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**(54) THERMAL OXIDE FILM FORMATION OF SILICON CARBIDE SEMICONDUCTOR DEVICE**

(57)Abstract:

PROBLEM TO BE SOLVED: To form an SiO<sub>2</sub> film which is 10% or more thicker than that conditions considered to have been the fastest oxidation velocity in a conventional method in an Si surface by setting a vapor partial pressure in a mixed gas of vapor and oxygen at a value in a specific range, when forming a thermal oxide film of a silicon carbide semiconductor device.

SOLUTION: When a silicon oxide film is formed on a heated SiC surface by introducing vapor and oxygen, a vapor partial pressure  $p(\text{H}_2\text{O})/[p(\text{H}_2\text{O})+p(\text{O}_2)]$  is controlled within the range of 0.1 to 0.9. Here,  $p(\text{H}_2\text{O})$ ,  $p(\text{O}_2)$  express the vapor pressures of vapor and oxygen, respectively. In a thermal oxide film formation method for forming an SiO<sub>2</sub> film by pyrogenic oxidation for performing thermal oxidation by introducing hydrogen and oxygen, the flow ratio of hydrogen and oxygen is controlled in the range of 1:0.6 to 1:9.5. Accordingly, a partial pressure of vapor is in the range of 0.1 to 0.9 as oxidation atmosphere in a furnace.

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